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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,548	12/27/2001	Shinji Saito	024016-00020	9580

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EXAMINER	
LE, NHAN T	

ART UNIT	PAPER NUMBER
2685	

DATE MAILED: 12/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/026,548	SAITO, SHINJI	
	Examiner	Art Unit	
	Nhan T Le	2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 December 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-11,17-20 and 28* is/are rejected.

7)☒ Claim(s) *4,12-16 and 21-27* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Ichimaru (US 6,622,010).

As to claim 1, Applicant's admitted prior art teaches a PLL frequency synthesizer, comprising: a voltage-controlled oscillator (see fig. 11, number 104, page 2, lines 8-11) for outputting an output frequency signal corresponding to a control voltage signal; a phase comparator (see fig. 11, number 101, page 2, lines 22-26) for outputting an output signal corresponding to a phase comparison between the output frequency signal and a reference frequency signal; and a charge pump circuit (see fig. 11, number 102, page 2, lines 26-30, page 3, lines 1-2) for varying the control voltage signal according to the phase-compared signal; whereby a feedback loop is configured, Applicant's admitted prior art fails to teach a signal flow of the feedback loop is periodically varied in a phase comparison cycle used in the phase comparator. Ichimaru teaches a signal flow of the feedback loop is periodically varied in a phase comparison cycle used in the phase comparator (see fig. 1, lines 25-45). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to

provide the teaching of Ichimaru into the system of Applicant's admitted prior art in order to reduce the phase difference between the reference signal and the comparision signal (as suggested by Ichimaru col. 3, lines 61-67, col. 5, lines 63-67).

2. Claims 2, 3, 7, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Ichimaru (US 6,622,010) and in further view of Bortolini et al (US 5,473,640).

As to claim 2, the combination of Applicant's admitted prior and Ichimaru fails to teach the PLL frequency synthesizer, wherein the operation of the feedback loop periodically stops in the phase comparison cycle used in the phase comparator. Bortolini teaches the PLL wherein the operation of the feedback loop periodically stops in the phase comparison cycle used in the phase comparator through the switch operation (see fig. 1, number 13, col. 3, lines 1-50). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Bortolini into the system of Applicant's admitted prior art and Ichimaru in order to provide signal control between the controller output and oscillator (as suggested by Bortolini, col. 3, lines 18-24).

As to claim 3, the combination of Applicant's admitted prior art, Ichimaru, and Bortolini also teach the feedback loop includes a loop opening/closing switch circuit therewithin (see Bortolini fig. 1, number 13, col. 3, lines 1-50).

As to claim 7, the combination of Applicant's admitted prior art, Ichimaru, and Bortolini teaches the PLL, wherein the feedback loop stops the output of an output signal from the charge pump circuit (see Bortolini fig. 1, number 13, col. 3, lines 1-50).

As to claim 8, the combination of Applicant's admitted prior art, Ichimaru and Bortolini also discloses the PLL frequency synthesizer, wherein the charge pump circuit includes a path opening/closing switch circuit in an output path for an output signal outputted from the charge pump circuit (see Bortolini see fig. 1, number 13, col. 3, lines 1-50).

3. Claims 5, 6, 9, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Ichimaru (US 6,622,010), Bortolini et al (US 5,473,640) and in further view of Weindorf (US 6,396,217).

As to claims 5, 6, the combination of Applicant's admitted prior art, Ichimaru and Bortolini fails to teach the loop opening/closing switch circuit includes an MOS transistor or JFET transistor. Weindorf teaches the loop opening/closing switch circuit includes an MOS transistor or JFET transistor (see fig. 3, number 326, col. 7, lines 46-65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Weindorf into the system of Applicant's admitted prior art, Ichimaru, and Bortolini because MOS and JFET transistor switches have advantages such as high switching speed.

As to claims 9, 10, the claims are rejected for the same reason as stated in claims 5, 6 above.

4. Claims 11, 17, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Ichimaru (US 6,622,010) and in further view of Abe et al (US 5,794,130).

As to claim 11, the combination of Applicant's admitted prior and Ichimaru teaches the PLL frequency synthesizer, wherein at least one filter circuit for determining the signal flow of the feedback loop is provided in a path which extends from the charge pump circuit to the voltage-controlled oscillator. However, the combination of Applicant's admitted prior art fails to teach the filtering characteristic of the filter circuit is periodically varied in the phase comparison cycle of the phase comparator. Abe teaches a synthesizer including PLL and variable time constant filter (see col. 2, lines 3-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Abe into the system of Applicant's admitted prior art and Ichimaru in order to suppress sudden fluctuations in the output level from the filters when time constant is switched (as suggested by Abe at col. 2, lines 22-24).

As to claims 17, 18 the claim is rejected for the same reason as stated in claim 11 above.

5. Claims 19, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Ichimaru (US 6,622,010), Abe et al (US 5,794,130) and in further view of Weindorf (US 6,396,217).

As to claims 19, 20, the combination of Applicant's admitted prior art, Ichimaru, Abe fails to teach the resistive element device is an MOS transistor or JFET transistor. Weindorf teaches an MOS transistor or JFET transistor (see fig. 3, number 326, col. 7, lines 46-65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Weindorf into the system of

Applicant's admitted prior art, Ichimaru, and Abe because MOS and JFET transistor switches have advantages such as high switching speed.

6. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Ichimaru (US 6,622,010), Abe et al (US 5,794,130) and in further view of Mole et al (US 6,226,509).

As to claim 28, the combination of Applicant's admitted prior, Ichimaru, and Abe fails to teach that the filter circuit is a voltage-driven type. Mole teaches the filter circuit is a voltage-driven type (see col. 10, lines 33-41). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Nishikawa into the system of Applicant's admitted prior art and Ichimaru so that the cost can be reduced since there is no extra component is required in the integration of the filter (as suggested by Mole, see col. 10, lines 33-41).

Allowable Subject Matter

Claims 4, 12-16, 21-24, 25-6, 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claim 4, the applied reference fails to teach the PLL frequency synthesizer wherein a first filter circuit and a second filter circuit for determining the signal flow of the feedback loop are provided in a path which extends from the charge pump circuit to the voltage-controlled oscillator, and the loop opening/closing switch circuit is provided between the first filter circuit and the second filter circuit as cited in the claim.

As to claim 12, the applied reference fails to teach the PLL frequency synthesizer , wherein the filter circuit includes, a bypass path group having at least two bypass paths different in filter characteristic, and a selector switch circuit which selects a predetermined bypass path from the bypass path group as specified in the claim.

As to claim 21, the applied reference fails to teach the PLL frequency synthesizer according to claim 1, wherein the charge pump circuit includes an output capability switching circuit for selecting the capability of supply of an output signal outputted from the charge pump circuit as recited in the claim.

As to claim 25, the applied reference fails to teach the PLL frequency synthesizer according to claim 1, wherein a period in which the characteristic variation or the operation stop is performed, is a predetermined period which includes an output period of the reference frequency signal subjected to comparison in the phase comparator as recited in the claim.

Response to Arguments

Applicant's arguments with respect to claims 1-28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nhan T Le whose telephone number is 703-305-4538. The examiner can normally be reached on 08:00-05:00 (Mon-Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on 703-305-4385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nhan Le

N. Le

Nguyen Vo
12-21-2004

NGUYEN T. VO
PRIMARY EXAMINER